SPECTRAN *V4*
Remote Spectrum Analyzer

PC
USB 2.0   ON/OFF

SPECTRUM ANALYZER
AUDIO   RF   ON/OFF

-67,5 dBm

Remote controllable Spectrum Analyzer - RSA Series

Rack-Mount RF/EMF Data-Logger with integrated PC
Gapless Spectrum Streaming / Realtime Remote Control

Highlights:

◆ Full remote control from any location with any device (PC,PDA,IPad,Smartphone)
◆ Continuously streaming and storing from any spectrum of interest
◆ Allows the monitoring of multiple sites from one centralized location
◆ Eliminates trips to difficult locations
◆ Integrated Celeron or i5 PC and huge internal storage for continous data logging
◆ 19" standard module with one height unit only (1U)
◆ PC/MAC/LINUX Analyzer Software included
◆ Extremely high Sensitivity (max. -170dBm/Hz)
◆ Wide frequency range starting from 1Hz up to 9,4GHz (EMF & RF)
◆ Spectrum Display, Waterfall, Histogram, Limits, Time-Domain and more
◆ Limit calculations according to DIN/VDE 0848, ICNIRP, EN55022, EN55011 etc.
◆ Customizable Alarm-, Trigger- and Limits-Function

AARONIA AG ®
W W W . A A R O N I A . D E

Made in Germany

Specifications

Universal Specifications RSA series

- Fits to all common 19" Racks
- Compact, one height unit only (1U)
- CPU (internal PC): Intel Celeron G530 2,4GHz (optional i5)
- RAM: 2x2GB SO-DiMM DDR3, 1066MHz
- HDD: 320GB (5400rpm), bigger HDD on request
- External Ports: 2x USB 2.0, 2x USB 3.0, 1x Audio, 1x 10/100/1000Mb/s Ethernet, 1x DVI-I (Analog, Digital) 1x HDMI, 1x eSATA
- Remote Interface: Ethernet/USB2.0/1.1
- Optional remote Interface: GSM, WLAN/WiFi etc.
- Power Supply: 1x 19,5V (7,9A max.) and 1x12V (international)
- Operatingsystem: Linux
- Audio-out for PC-based FFT Analyzer-Software
- Exposure limit calculation according to standards (ICNIRP, BGV B11, BImSchV, EN55022, EN55011 etc.)
- Included Analyzer Software for MAC OS, Linux, Windows
- CE certified
- Dimensions (L/W/D): 485x300x45 mm
- Weight: 2550gr
- Warranty: 10 years (internal PC 2 years)

SPECTRAN HF RSA 6000

- Frequency range: **10MHz to 6GHz**
- Realtime Remote Control per Ethernet, USB or GSM/3G (optional)
- AVG Noise Level (DANL): -135dBm(1Hz)
- AVG Noise Level (DANL) PreAmp: **-150dBm**(1Hz)
- AbsMax Level: +10dBm
- Lowest possible SampleTime: **10mS**
- Typ. accuracy: +/- 2dB
- Resolution Bandwith (RBW): 3kHz - 50MHz
- Units: dBm, dBµV, V/m, A/m, W/m², dBµV/m, W/cm² etc.
- Detector modes:: RMS, Min/Max
- Demodulation: AM, FM
- Input: 50 Ohm N Input (f)
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)

SPECTRAN HF RSA 9000

- Frequency range: **1MHz to 9,4GHz**
- Realtime Remote Control per Ethernet, USB or GSM/3G (optional)
- AVG Noise Level (DANL): -155dBm(1Hz)
- AVG Noise Level (DANL) PreAmp: **-170dBm**(1Hz)
- AbsMax Level: +20dBm
- AbsMax Level: **+40dBm** (Option)
- Lowest possible SampleTime: **5mS**
- Typ. accuracy: +/- 1dB
- Timebase: 0,5ppm TCXO (option)
- Resolution Bandwith (RBW): 1kHz - 50MHz in 1/3/10 steps
- EMC Filter: 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz
- Units: dBm, dBµV, V/m, A/m, W/m², dBµV/m, W/cm² etc.
- Detector modes:: RMS, Min/Max
- Demodulation: AM, FM, PM, GSM
- Input: 50 Ohm N Input (f)
- 14Bit Dual-ADC
- DDC Hardware-Filter
- 150 MIPS DSP (CPU)

SPECTRAN NF RSA 5000

- Frequency range: **1Hz to 1MHz** (optional **30MHz**)
- Realtime Remote Control per Ethernet, USB or GSM/3G (optional)
- Typ. level range Analog AC in: **200nV** to 200mV / -150dBm (Hz)
- Resolution Bandwith (RBW): 0,3Hz - 1MHz in 1/3/10 steps
- Units: V, dBV, dBm, dBµV, V/m, A/m, W/m², dBµV/m etc.
- Typ. accuracy: 3%
- FFT and DFT spectrum analysis
- High-performance DSP (Digital Signal Processor)
- True RMS signal strength measurement
- Detector modes: RMS, Min/Max
- Demodulation: AM, FM
- Input: high impedance N Input (f)

19inch Spectrum Analysis

The SPECTRAN RSA Spectrum Analyzer Series offers an incredible performance at an unbeatable price-performance ratio in a noble 19inch rack-housing.
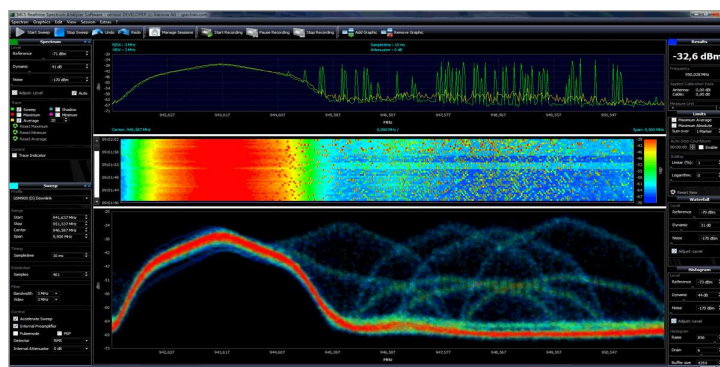
Each RSA unit can be mounted into a common 19" instrument rack and requires one height unit (1U) only. Thus the RSA is perfectly suitable for stationary use in laboratories as well as, thanks to the low power consumption, for mobile use in measuring vehicles or satellite broadcasting vans.

The Analyzer is remote controllable through the USB interface or Lan/Ethernet. Optionally available is the advanced logger and monitoring Software „**EMF Monitor**", a webinterface-based Software which allows a continuous logging and streaming of any frequency range and direct access to the Analyzer throug each PC connected to the Internet (see page 4 for further details about the logger software).
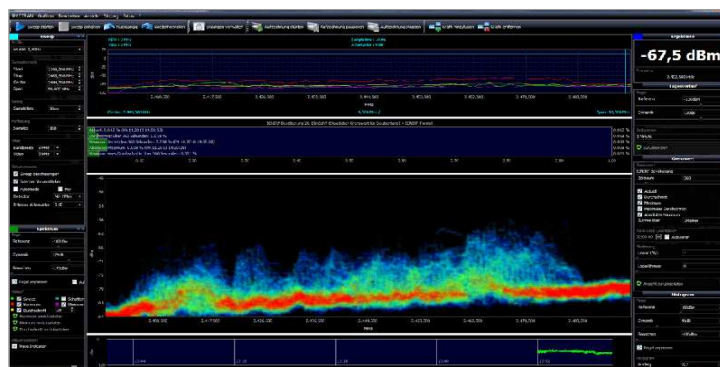
Powerful Analyser Software „MCS" included for free

The cross-platform Spectrum Analyzer Software MCS for Windows, Linux and MAC OS shows the full potential of the SPECTRAN RSA units. The measurement results and controls work in realtime, which means without any delay between the reception and the display of the signal on a monitor.

◆ Works on all important operating systems like Windows, MAC OS and Linux
◆ Multi-Device capable, remote control function of several RSA units which can be controlled simultaneously from the same PC
◆ Real-Time remote control with any RSA Spectrum Analyzer
◆ Unlimited number of limits e.g. EN55011, EN55022, ICNIRP and more, inclusive limit lines and beam indicator as well as a special limit editor to create and save custom limits
◆ Multi window support
◆ Powerful Undo-Feature
◆ Customer-specific skins and color-settings
◆ Record and Replay function
◆ Advanced Trigger and alarm functions
◆ Unlimited number of markers
◆ Multiple views at the same time: Spectrum, Waterfall, Histogram, Limits, Chanelpower, Providerdisplay, Time Domain, Results...
◆ Personal sessions handling
◆ Simultaneous display of multiple units like dBm, dBµV, V/m, W/m² etc. with powerful autorange
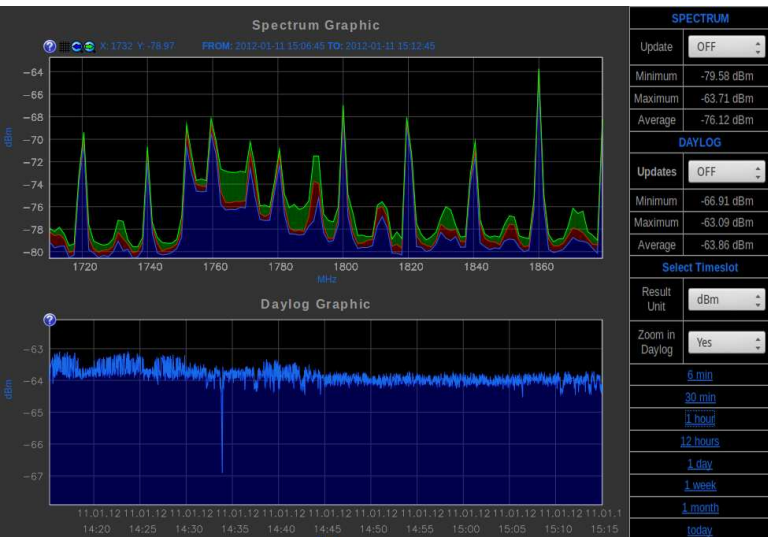◆ and many more features that are constantly evolving...

Measurement of a disturbed GSM signal incl. Spectrum (Min/Max/AVG), Waterfall, Results and Histogram view.

Measurement of the 2,4GHz WLan-range incl. Spectrum, Channel, Limits, Results and Histogram view

The browser-interface of the EMF Monitor with Spectrum and Daylog Graphic

Advanced Logger- and Monitoring-Software „EMF Monitor"

Further to the included MCS Software (which offers a realtime connection to the RSA) the optional Loggersoftware „EMF-Monitor" transforms the SPECTRAN RSA into a powerful logger box which offers a continuous streaming of any spectrum to the internal disk up to years! This eliminates trips to difficult remote locations.
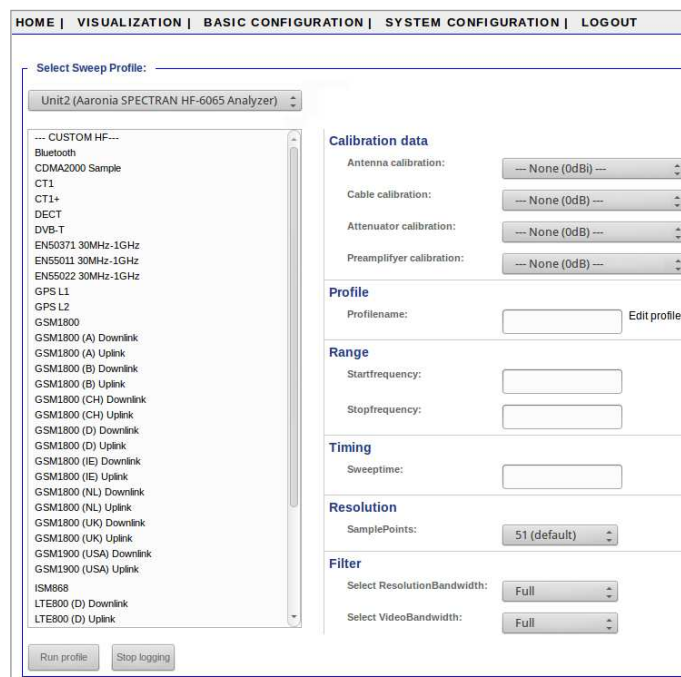
The „EMF-Monitor" allows a monitoring of multiple sites (multiple SPECTRAN RSA units) from one centralized location, making it the perfect tool e.g. for telecom providers who needs to test the signal strength of several base stations at once or „just" a powerful EMC monitoring.

Using the webinterface of the „EMF-Monitor" each SPECTRAN RSA can be remote controlled from any point in the world. The only requirement is a PC, Tablet or Smartphone with internet access.
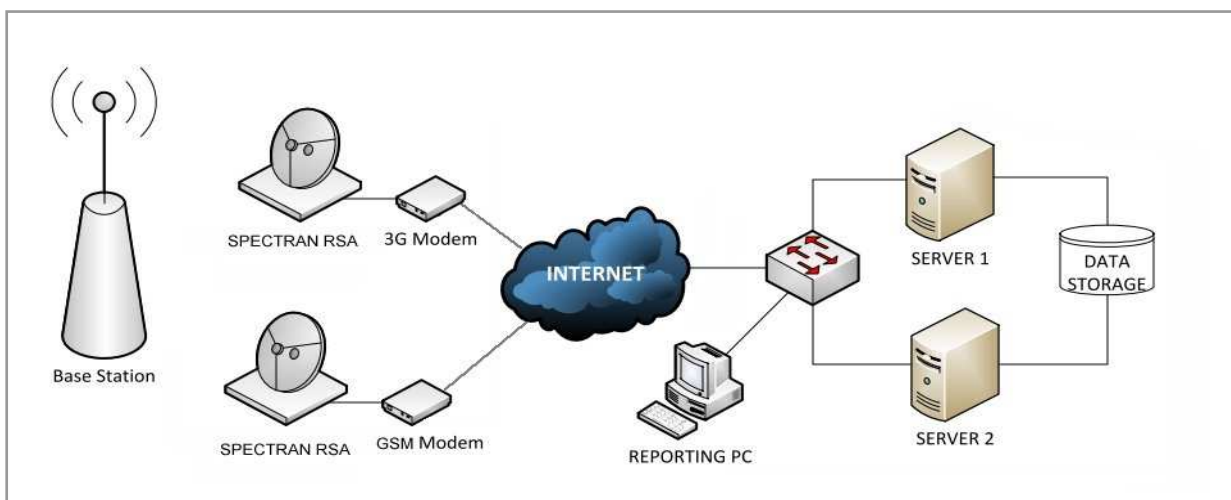
A continous logging and streaming (datas can be stored and replayed up to years) of any frequency range as well as the storage on the harddisk of the SPECTRAN RSA or on a webserver are further points of advantage of the „EMF-Monitor" Software.

Features „EMF-Monitor" Software

◆ Continuous logging & streaming of any frequency range

◆ Storage on the SPECTRAN RSA itself or on a webserver

◆ Monitoring of arbitrary time intervals

◆ Former measurements can be reviewed/replayed for more than 3 years using the standard HDD, depending on the settings the internal HDD saves measurement results even up to 30 years!

◆ Access to unlimited numbers of SPECTRAN RSA units by one web-interface only

◆ Alarm/Trigger Function, gives automatic alert (message, sound) whenever a presaved limit is reached

◆ Limit mode, direct view of presaved and custom limit lines in the spectrum window

◆ Export of measurement results in MCS data format, allows to replay the stored data with the powerful MCS Software

◆ Multi language support: English, German, French, Spanish

◆ Perfectly suitable for remote maintenance, stationary data acquisition, limit value monitoring and long time recording as stand alone unit without any measurement user

The webinterface of the „EMF-Monitor" Software allows full access to all settings of the Spectrum Analyzer like RBW, frequency range etc.

Example of a typical measurement setup using multiple SPECTRAN RSA units with „EMF-Monitor" Software installed, all captured measurement data are continously stored on the SPECTRAN RSA or Webserver and can be accessed through any PC

Comparison SPECTRAN® RSA Spectrum Analyser

Specifications basic unit[1]	NF RSA 5000	HF RSA 6000	HF RSA 9000
Frequency Range (min)	1Hz	10MHz	1MHz
Frequency Range (max)	30MHz	6GHz	9,4GHz
DANL (Displayed Average Noise Level)[2]	200nV	-135dBm(1Hz)	-155dBm(1Hz)
DANL (Displayed Average Noise Level) with Preamp (Option 020)[2]	-	-150dBm(1Hz)	-170dBm(1Hz)
Max. Power at RF input	2V[2]	+10dBm	+40dBm[2]
RBW (Resolution bandwidth) (min)	0,3Hz	10kHz	200Hz[2]
RBW (Resolution bandwidth) (max)	1MHz	50MHz	50MHz
EMC Filter 200Hz, 9kHz, 120kHz, 200kHz, 1,5MHz, 5MHz	-	-	✔
Demodulator	AM/FM	AM/FM	AM/FM/PM/GSM
Detector	RMS/MinMax	RMS/MinMax	RMS/MinMax
Units dBm, dBµV, V/m, A/m, W/m² (dBµV/m, W/cm² etc. via PC software)	V, dBV	✔	✔
Lowest Sample Time	10mS	10mS	5mS
Accuracy (typical)	+/-3%	+/-2dB	+/-1dB
Highlights			
Real-time remote control via USB	✔	✔	✔
Calibration setup (antenna, cable, attenuator etc.)	✔	✔	✔
Exposure limit calculation according to ICNIRP, EN55011, EN55022 etc.	✔	ICNIRP only	✔
Extended full ICNIRP range	-	-	✔
Suitable for Pre-Compliance test	✔	-	✔
Suitable for conductive EMC/EMI test	✔	-	✔
Real-time limit calculation, limit line display and limit percentage display	✔	✔	✔
Time Domain and fast Zero Span sweep incl. DECT and Time Slot Analyzer	-	✔	✔
Unlimited longtime recording and playback feature	✔	✔	✔
Simultaneously displays frequency and signal strength	✔	✔	✔
Multiple unit handling and unlimited multiple window handling	✔	✔	✔
Number of marker (showing frequency and field strength simultaneously)	unlimited	unlimited	unlimited
Spectrum, waterfall, persistance and level vs time display	✔	✔	✔
Sweep, AVG, Max, Min and Hold function	✔	✔	✔
Unlimited number of sweep points, resolution and display size	✔	✔	✔
Supports programming of custom P-Code, C++ based custom software support	✔	✔	✔
Free of charge firmware update (via Intenet)	✔	✔	✔
14Bit Dual-ADC & DDC hardware filter	-	✔	✔
150MIPS high performance DSP (Digital Signal Processor)	-	✔	✔
Vector power measurement (I/Q) and True RMS	✔	✔	✔
Integrated rechargable battery	-	-	-
Connectors / Interface			
50Ohm N input (f)	high impedance	✔	✔
USB 1.1/2.0, LAN	✔	✔	✔
Audio output (2,5mm jack)	✔	✔	✔
Charger plug (max. 12V)	✔	✔	✔
Included In Delivery			
Detailed English manual (on CD)	✔	✔	✔
Analyzer Software for MAC-OS, Linux and Windows (on CD)	✔	✔	✔
Logger Software for remote control through web-interface	optional	optional	optional
Power Suppply	✔	✔	✔
Optional Accessories			
DC-Blocker (protects the input against DC voltage)	✔	✔	✔
20dB Attenuator (expands the measurement range by 20dB)	✔	✔	✔
PBS1 Near Field Probe Set (passive)	✔	-	✔
PBS2 Near Field Probe Set (active, incl. UBBV2 preamplifier)	✔	-	✔
ADP1 Active Differential Probe (conductive measurement)	✔	-	✔
5m or 10m low loss SMA cable	-	✔	✔
Calibration Resistor (for noise floor calibration, SMA)	-	✔	✔
Calibration Certificate	-	✔	✔

[1] The new V5 real-time spectrum analyser generation up to 80GHz is already in development. Please contact us for further details! Preliminary specifications dated 15.02.2012. The HF RSA series are available with latest Beta firmware. The Beta firmware is constantly in development. Some functionality may still be limited and not fully to specifications (Beta status). By regularly checking our homepage for updates, you can always keep your measurement device up-to-date. As soon as V1.0 of the firmware is released, all functionality and features will be fully available. Range, sensitivity and accuracy can change depending on frequency, setup, antenna and used parameters. Precision datas are based on Aaronias calibration-reference under specific test conditions. Unless otherwise stated, these specifications are according to the following reference conditions: Ambient temperature 22±3°C, relative air humidity 40% to 60%, continuous wave signal (CW), RMS detection.

[2] HF RSA DANL @3,6009GHz. RSA 9000 internal: +20dBm. RSA 9000 external (with optional 20dB attenuator): +40dBm. RSA 9000 standard: 1kHz. Only with option 002 down to 200Hz.
NF RSA standard: 1MHz. Only with option 010 up to 30MHz. NF RSA standard: 200mV. Only with optional 20dB Attenuator up to 2V.

Options SPECTRAN RSA Spectrumanalyzer Series

Option „EMF-Monitor" (Advanced Logger- and Monitoring-Software)

Available for: HF RSA 6000, HF RSA 9000, NF RSA 5000
The „EMF-Monitor" Software transforms the SPECTRAN RSA into a powerful logger box which eliminates trips to difficult remote locations.
It allows a monitoring of multiple sites (using multiple SPECTRAN RSA units) from one centralized location, making it the perfect tool e.g. for telecom providers who needs to test the signal strength of several base stations.
(see page 4 for further information)

Order/Art.-No.: 185-1

Option 020: Internal 15dB low-noise preamplifier

Available for: HF RSA 6000, HF RSA 9000
This option provides an internal, super low-noise 15dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals. It is switched via a TRUE RF switch. There really is no excuse for not ordering this one, considering its very attractive price!
The maximum sensitivity of the HF RSA series without option 020 is lower by 15dB.

Order/Art.-No.: 177

Option 002: 0,5PPM TCXO timebase

Available for: HF RSA 9000
This highly precise TCXO timebase, which has been especially developed for the SPECTRAN®, offers significantly reduced phase noise (jitter). This will allow the use of far narrower filters (in development), which will in turn vastly enhance sensitivity. To fully exploit the maximum sensitivity of the HF RSA 9000, this option is indispensable! Furthermore, the TCXO timebase allows far more accurate frequency measurement and display and is therefore a MUST-HAVE for future applications like time-domain measurements or code-selective measurement of UMTS, all already in development.The standard accuracy without option 002 is 50ppm.

Order/Art.-No.: 181-2

Option 022: 40dB low-noise preamplifier 1kHz - 8Ghz

Available for: HF RSA 6000, HF RSA 9000, NF RSA 5000
This option provides an external, super low-noise 40dB preamplifier, enabling maximum performance particularly when measuring extremely weak signals at a EN55011, EN55022 or EN50371 EMC-test. If you use a BicoLOG antenna or PBS1 Near Field Probeset this amplifier is a MUST HAVE to get the best performance!

Order/Art.-No.: 177-2

Option 010: 30MHz frequency extension

Available for: NF RSA 5000
Our 30MHz frequency extension extends the frequency range of the NF RSA 5000 to the absolute maximum. The new frequency range is 1kHz - 30MHz. Amongst others, it even allows measurement of VDSL2. The higher clock frequency of the DDC provided by this option is a MUST HAVE for technicians and authorities needing ACCURATE assessment of signal sources of up to 30MHz. The maximum frequency of the NF RSA 5000 without option 010 is 1MHz.

Order/Art.-No.: 179-1

Option i5: Highend Intel i5

Available for: HF RSA 6000, HF RSA 9000, NF RSA 5000
Transforms the Spectran RSA to a highend 19" rack-mount version with built-in Intel i5-2405S, 8GB DDR3 (1333MHz) RAM, 320GB HDD, 1x DVI-I (analog + digital), 1x HDMI, external power supply and linux operating system. Can be used as standalone desktop PC as well as network Spectran server.

Order/Art.-No.: 183

References

User of Aaronia Antennas and Spectrum Analyzers (Examples)

Government, Military, aeronautic, astronautic

- NATO, Belgium
- Boeing, USA
- Airbus, Hamburg
- Bund (Bundeswehr), Leer, Germany
- Bundeswehr (Technische Aufklärung), Hof, Germany
- Lufthansa, Hamburg, Germany
- DLR (Deutsches Zentrum für Luft- und Raumfahrt, Stuttgart
- Eurocontrol (Flugüberwachung), Belgium
- Australian Government Department of Defence, Australia
- EADS (European Aeronautic Defence & Space Company) GmbH, Ulm, Germany
- Institut für Luft- und Raumfahrtmedizin, Cologne, Germany
- Deutscher Wetterdienst, Tauche, Germany
- Polizeipräsidium, Bonn, Germany
- Landesamt für Umweltschutz Sachsen-Anhalt, Halle
- Zentrale Polizeitechnische Dienste, Germany
- Bundesamt für Verfassungsschutz, Cologne, Germany
- BEV (Bundesamt für Eich- und Vermessungswesen)

Research/Development, Science and Universitys

- Deutsches Forschungszentrum für Künstliche Intelligenz, Kaiserslautern, Germany
- University Freiburg, Germany
- Indonesien Institute of Sience, Indonesia
- Max-Planck-Institut für Polymerforschung, Mainz
- Los Alamos National Labratory, USA
- University of Bahrain, Bahrain
- University of Florida, USA
- University Erlangen, Erlangen, Germany
- University Hannover, Hannover, Germany
- University of Newcastle, United Kingdom
- University Strasbourg, France
- University Frankfurt, Germany
- University Munich, Germany
- Technical University Hamburg, Germany
- Max-Planck Institut für Radioastronomie, Germany
- Max-Planck-Institut für Quantenoptik, Germany
- Max-Planck-Institut für Kernphysik, Germany
- Max-Planck-Institut für Eisenforschung, Germany
- Forschungszentrum Karlsruhe, Germany

Industry

- Shell Oil Company, USA
- ATI, USA
- Fedex, USA
- Walt Disney, California, USA
- Agilent Technologies Co. Ltd., China
- Motorola, Brazil
- IBM, Switzerland
- Audi AG, Neckarsulm
- BMW, München
- Daimler Chrysler AG, Bremen
- BASF, Ludwigshafen
- Deutsche Bahn, Berlin
- Deutsche Telekom, Weiden
- Siemens AG, Erlangen
- Rohde & Schwarz, München
- Infineon, Österreich
- Philips Technologie GmbH, Aachen
- ThyssenKrupp, Stuttgart
- EnBW, Stuttgart
- RTL Television, Köln
- Pro Sieben – SAT 1, Unterföhring
- Channel 6, United Kingdom
- WDR, Köln
- NDR, Hamburg
- SWR, Baden-Baden
- Bayerischer Rundfunk, München
- Carl-Zeiss-Jena GmbH, Jena
- Anritsu GmbH, Düsseldorf
- Hewlett Packard, Dornach
- Robert Bosch GmbH, Plochingen
- Mercedes Benz, Austria
- EnBW Kernkraftwerk GmbH, Neckarwestheim
- AMD, Dresden
- Infineon Technologies, Regensburg
- Intel GmbH, Feldkirchen
- Philips Semiconductors, Nürnberg
- Hyundai Europe, Rüsselsheim
- Saarschmiede GmbH, Völklingen
- Wilkinson Sword, Solingen
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- Vattenfall, Berlin
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